REMARKS

This is responsive to the Office Action mailed July 26, 2006. Applicants respectfully submit that the claims as set forth herein patentably distinguish over the references, and accordingly ask that claims 2-6, 18, 23, and 26-31 as set forth herein be reconsidered and allowed.

Status of the Claims

Claims 2-9, 18, 23, and 26-29 were examined in the Office Action.

Claims 2, 4-7, 9, 18, 23, and 26-29 stand rejected under 35 U.S.C. § 102(e) as being allegedly anticipated by Camras et al., U.S. Pat. No. 6,784,463 (hereinafter "Camras").

Claims 3 and 8 stand rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Camras in view of Shieh et al., U.S. Pat. No. 5,780,321 (hereinafter "Shieh").

Claims 7-9 stand rejected under 35 U.S.C. § 112 2nd paragraph for certain alleged indefiniteness.

The amendments

Claim 5 has been placed into independent form including all limitations of canceled base claim 2. Claims 3, 4, and 6 have been placed off of claim 5 and amended for consistency with claim 5.

Claims 7-9 are canceled, thus obviating the rejection of these claims under § 112.

Each of claims 18 and 26 have been amended to clarify that the substrate is removed after the flip-chip bonding.

New claim 30 recites subject matter analogous to that of claim 4, but depends from independent claim 26.

New claim 31 recites subject matter analogous to that of claim 28, but depends from independent claim 18.

The claims present patentable subject matter and should be allowed

Claim 5 recites, subsequent to the removing of the deposition substrate, non-epitaxially depositing at least one light-transmissive, electrically conductive window layer on a surface of the mesa opposite the electrode. The Office Action alleges this subject matter is anticipated by Camras' "conventional deposition techniques." However, it is respectfully submitted that Camras' "conventional deposition techniques" relate to epitaxial deposition techniques. Camras teaches:

> In some embodiments, superstrate 117 is grown on stack 110 using conventional deposition techniques such as, for example, MOCVD, VPE, and LPE. In one embodiment, for example, active region 112 includes a light-emitting layer formed from a III-Arsenide material, and superstrate 117 is formed from an AlGaAs alloy grown on stack 110. In such embodiments, the light-emitting device need not include a bonded interface. In embodiments in which superstrate 117 is grown, an optional composition graded layer may be grown on stack 110 (before the growth of superstrate 117) to enable lattice-matched growth of superstrate 117 despite a lattice mismatch between superstrate 117 and stack 110. The composition of the graded layer varies such that the layer is substantially lattice matched to both stack 110 and superstrate 117. Such a composition graded layer may take the place of bonding layers 126 of FIG. 2A, for example, and is typically selected to be substantially transparent to light emitted by active region 112.
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> Camras col. 10 line 60 through col. 11 line 10.

The examples of "conventional deposition techniques" include MOCVD, VPE, and LPE, all of which are epitaxial crystal growth techniques. Further, in depositing the superstrate (117) Camras is expresses concern about lattice mismatch between the superstrate (117) and the stack (110), even to the point of designing in a compositionally graded layer to accommodate lattice mismatch. One is only concerned about lattice match in epitaxial deposition; the concept is meaningless for non-epitaxial deposition. Camras' concern about lattice matching reinforces that epitaxial deposition is being taught.

To anticipate a claim to a species, it is not sufficient to disclose a genus without also naming the species. "A genus does not always anticipate a claim to a species within the genus. However, when the species is clearly named, the species claim is anticipated no matter how many other species are additionally named." MPEP § 2131.02. Even if Camras' "conventional deposition techniques" were read as a genus of deposition

techniques encompassing non-epitaxial depositing (a point which Applicants do not concede), this would still not be sufficient to anticipate claim 5.

Each of **claim 18** and **claim 26** have been amended to clarify that the substrate removal is performed after the flip-chip bonding. Camras does not disclose or fairly suggest this processing order. To the contrary, Camras discloses forming the complete light emitting device, including the superstrate (117), and then flip-chip bonding:

> Since contacts 118 and 120 (FIGS. 2A-2B, 3A-3C) are both disposed on the bottom of stack 110, in embodiments in which contacts 118 and 120 are opaque (e.g., reflective), a larger fraction of light emitted by active region 112 exits the stack through its top side into superstrate 117 than through its bottom side. Consequently, light-emitting devices 100 and 101 may be advantageously attached as a flip chip to a submount, for example. Referring to FIG. 4, for example, in one embodiment light-emitting device 100 is attached to a submount 130 and oriented with superstrate 117 facing away from submount 130 and contacts 118 and 120 facing toward submount 130. Solder connection 132 electrically couples contact 118 to contact 134 on submount 130. Solder connection 136 similarly electrically couples contact 120 to contact 138 on submount 130. In this embodiment, light emitted by active region 112 typically exits light-emitting device 100 primarily through superstrate 117. Solder connections 132 and 136 may be formed, for example, with conventional solders or other conductive adhesives.
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> Camras at col. 9 lines 25-44.

Camras teaches that the devices (100) and (101) may be advantageously attached as a flip chip to a submount. Camras Fig. 2A, 3A, and 3B expressly show that the devices (100, 101) each include the superstrate (117). Camras teaches that these devices (100, 101), which include the submount (117), are flip-chip mounted to a submount.

This is contrary to the recitation of claims 18 and 26, each of which require the order of (i) flip chip bonding to the sub-mount, (ii) epitaxy substrate removal, and (iii) depositing the window layer. The approach of claims 18 and 26 has substantial advantage over the approach of Camras. By flip-chip bonding to the sub-mount first, the sub-mount provides structural support for the layers stack during the critical period between removal of the epitaxy substrate (the GaAs substrate in claim 26) and the depositing of the window layer.

In contrast, Camras teaches two very different approaches. In one approach (Camras Figs. 5A-5D) the epitaxy substrate (140) remains attached when the superstrate (117) is bonded or deposited on the opposite side of the layers stack (110). Claims 18 and 26 call for removal of the epitaxy substrate before depositing the window layer.

In Camras' second approach (Camras Figs. 6A-6D) the epitaxy substrate (140) is removed first, followed by bonding or deposition of the superstrate (117). For this approach, Camras expressly teaches layer (124) of the layers stack (110) provides mechanical support for stack (110) during the removal of substrate (140) and during attachment of superstrate (117). Camras col. 11 lines 34-35. This requires that the epitaxial layer (124) be rather thick in order to provide mechanical support, which is a substantial imposition on the epitaxial growth (e.g., requiring substantially lengthened epitaxial growth time, limiting material options for layer (124), and so forth.

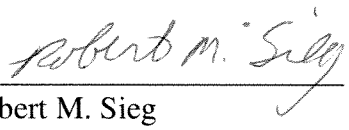
Claims 28 and 31 depends from claim 26 and claim 18, respectively, and each calls for non-epitaxially depositing at least one light-transmissive, electrically conductive window layer. Comments above pertaining to claim 5 are apropos to claims 28 and 31.

CONCLUSION

In view of the foregoing amendments and remarks, it is respectfully submitted that all claims 2-6, 18, 23, and 26-31 as set forth herein are in condition for allowance and that all informalities have been remedied. Accordingly, an early indication of allowance of the application is earnestly requested.

Respectfully submitted,

FAY, SHARPE LLP



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